

Appl. No. : 09/316,518
Filed : May 21, 1999

REMARKS

In response to the Office Action dated October 29, 2003, Applicants submit herewith a petition for an extension of one month of time with the appropriate fee, a request for continued examination, foregoing amendments and the following remarks. By the foregoing amendments claims 24, 42, 48, 73, 88 and 92 have been amended.

Rejections Under § 102

In the Office Action, Claims 24, 26-38, 42-48, 50-51, 72 and 88-91 were rejected under 35 U.S.C. § 102(e) as being anticipated by Papadopoulos (U.S. Patent No. 5,594,720). Applicants reserve the right to challenge whether this reference is available as prior art under § 102. Though the foregoing remarks are primarily directed to independent claims 24, 42, 48, 52 and 88, they apply with equal force to each of the claims which depend therefrom.

In general, embodiments of the invention relate to systems and methods which predict uplink and downlink requirements in a duplex transmission communication link. That prediction is then used to set the ratio between the uplink and the downlink in a frame. The uplink slots and downlink slots in the frame can then be allocated in response to bandwidth requests. For example, in a station having a base station with multiple customer premise equipment (CPEs), the ratio between uplink and downlink for the communication link between the base station and all of the CPEs is set first based upon a prediction of the bandwidth requirements. In addition, this prediction or looking forward allows the system to take into account other factors, such as interference with adjacent base stations. That prediction is then used to set the uplink/downlink ratio for the frames and then the base station can allocate the slots within the frames to the various CPEs based upon bandwidth requests or demand.

The claimed systems and methods can be contrasted with Papadopoulos which is generally directed to a method for reducing co-channel interference in a multiple access cellular communications system. Papadopoulos appears to teach some adjustment of the split between uplink and downlink in a TDD system based only on instantaneous user request. Papadopoulos does not appear to teach or suggest a forward looking prediction of bandwidth requirements which is then used to set the uplink/downlink split for a frame. In other words, Papadopoulos appears to be only reactive. A system which is only reactive, responsive to demands for

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bandwidth, would not provide the quality of service and be able to allow different cell sites to negotiate or maximize their reuse patterns.

In the Office Action claims 70, 71 and 73 were rejected under 35 U.S.C. § 102(e) as being anticipated by Raith (U.S. Patent No. 5,729,531) and claims 25, 39-41, 49 and 92-96 were rejected over the combination of Raith and Papadopoulos.

In general, Raith describes a system for allocating a mobile stations to a limited number of channels. Raith can be generally described as addressing issues of call admission. Raith does not appear to teach or describe using an initially known connection information, for example, quality of service, for adjusting the uplink/downlink ratio.

With regard to claims 70-73, those claims are directed to methods for monitoring updating the uplink and downlink bandwidth ratio. For example, claims 73 describes calculating and initial uplink/downlink bandwidth requirement ratio for frame based upon initial requirements. Slots within the frame with that rational are then allocated. The actual uplink/downlink bandwidth requirements are then determined based upon the actual usage. The uplink/downlink ratio is then calculated again based upon that actual usage.

Raith does not appear to teach or suggest a system which predicts an initial uplink/downlink ratio and uses that ration in a frame and then assigns slots in that frame with that uplink/downlink ratio. Rather Raith appears to merely describes call admission with no description of predicting uplink/downlink requirement using that requirement to set the uplink/downlink ratio in a frame and then allocating the slots in that frame with that ratio.

With regard to claims 25, 39-41, 49 and 92-96, applicants submit that Raith provides no teaching or suggestion with overcomes the shortcomings of Papadopoulos described above. With regard to claims 25, 39-41 and 49, each of those claims depend from an independent claim which was described above. Applicants submit that each of these dependent claims is patentable at least for the reasons indicated above.

With regard to claims 92-96, independent claim 92, as amended, is patentable over the references of record.

Amended claim 92 is directed to a method which includes, inter alia, calculating an initial uplink/downlink bandwidth requirement ratio for a frame based upon the initial bandwidth requirements of the link. Slots in that frame with that uplink/downlink are then allocated over time, an actual uplink bandwidth requirement and a downlink bandwidth requirement based upon

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actual utilization are determined. The uplink/downlink bandwidth ratio is then calculated based upon that actual usage.

Again, Papadopoulos does not teach or suggest a forward looking system which first predicts usage and then sets the uplink/downlink ratio for a frame based upon on that prediction. Papadopoulos further does not teach updating or modifying the uplink/downlink ratio based upon actual utilization. Raith provides no teaching or suggestions which overcome these shortcomings.

Conclusion


The Applicants have endeavored to address all of the Examiner's concerns as expressed in the outstanding Office Action. Accordingly, amendments to the claims, the reasons therefor, and arguments in support of the patentability of the pending claim set are presented above. Any claim amendments which are not specifically discussed in the above remarks are made in order to improve the clarity of claim language, to correct grammatical mistakes or ambiguities, and to otherwise improve the capacity of the claims to particularly and distinctly point out the invention to those of skill in the art. In light of the above amendments and remarks, reconsideration and withdrawal of the outstanding rejections is specifically requested. If the Examiner finds any remaining impediment to the prompt allowance of these claims that could be clarified with a telephone conference, the Examiner is respectfully requested to initiate the same with the undersigned.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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